

AMERICAN VETERINARY REVIEW,

NOVEMBER, 1888.

EDITORIAL.

THE REVIEW PRIZE.—The report made by the Chairman, Prof. Huidekoper—majority of four—“Studies of a Cattle Disease hitherto ill understood” wins the prize—Dr. P. Paquin the successful candidate—the course is yet open—same offer for the coming year—looking forward to more competition. **IS CASTRATION VETERINARY SURGERY?**—The importance of the question—serious interests involved in the answer—how the question arose—charges of a learned justice—a case of prosecution—who is to prosecute in States where the profession is protected by law?—our opinion on the subject—affirmative, of course—as much as any other specialty—as much as obstetrics or orthopedics as branches of human medicine—is the verdict a just one?—would an appeal be more favorable? **MATERIAL FOR THE REVIEW.**—Liberality of our friends—Dr. Williams on “Maladie du Coit”—Dr. J. C. Meyer, Sr., on “Enzootic Meningitis of Cattle”—Dr. Klench on “Rattleweed or Loco Disease.” **CALIFORNIA STATE VETERINARY SOCIETY.**—Its organization—its difficulties—our wishes and hopes for its success—let us hear from it. **SPECIAL NOTICE.**—Thanks to some of our friends—remember us to others.

THE REVIEW PRIZE.—The annual meeting of the United States Veterinary Medical Association was the occasion selected by Professor Huidekoper, chairman of the Review Prize Committee, for the consideration of the reports of his colleagues upon the merits and the comparative value of the papers which were printed in the May and June numbers of our journal. Four members, of the committee of five, expressed their preference for the paper entitled, “Studies of a Cattle Disease hitherto ill understood, by A. Westerner, M.D., V.S.,” and it was, therefore, pronounced to be the better of the only two rival productions

which had been submitted. The opening of the accompanying envelope disclosed the name of Dr. P. Paquin, of Columbia, Mo., as the author, and, consequently, the prize has been accorded and delivered to that gentleman. In closing this transaction, and congratulating Dr. Paquin on his success, it gives us pleasure to announce to our readers and the friends of the profession, that our offer is still open and available for the current year, with the same conditions as before, and we hope not only to receive a greater number of contributions for competition, but that we shall witness a still more extensive, complete and thorough discussion of important topics, such as shall both reflect credit upon its authors and be of permanent value to the profession, besides being at least commensurate with the value of the prize.

Is CASTRATION VETERINARY SURGERY?—We have received a letter of inquiry, from a practitioner, which involves a question of vital importance to the veterinarian, especially at the present time, when appeals for legislative action for the regulation of the practice of veterinary medicine are pending in many of the States, and the protection of statutory law has been already, to a partial extent, secured in a few.

The question has arisen incidentally, in connection with the announcement contained in a charge by a learned member of the judiciary, to the effect that, "Cutting or castrating horses or colts is not veterinary surgery," which is, of course, equivalent to saying that every man has a legal right to be a gelder, whether a veterinarian or not. The case was briefly this:

"A" is a registered practitioner in the State of New York; "B" is not, and has practiced castration; for this, "A" causes the arrest of "B," and commences proceedings, but on a second thought (which has proved to be an unlucky one), is induced to discontinue them, receiving a money consideration for doing so, and for payment of expenses incurred. "B" then sues "A" for malicious prosecution and false imprisonment, and it was in the trial of this case that the learned judge charged that "cutting or castrating horses or colts is not veterinary surgery." The result of it all was a verdict against "A" for \$250 damages, and "A" lays his grievance before us, and appeals for advice, beyond bestowing which our appellate jurisdiction extends not.

We believe that "A" performed his duty, but that it would have been wiser, if instead of acting upon his own sole responsibility, he had enlisted the aid of some better authority to press the prosecution against "B." We think it would have been better for him to have referred the case to the New York State Veterinary Society, which body, we suppose, has made provision for similar cases, since the passage of the law as last amended. If this is not so, it is high time that registered veterinarians and practitioners should know where to look for the proper authority to which to apply in similar cases. But perhaps these suggestions are lacking in pertinency, and it may also be that the proceedings were sufficiently regular all through, or poor "B" would not have been in jail and exposed to prosecution.

The important question now is, whether "Castration is a part of veterinary surgery." We do not hesitate to answer this in the affirmative, and we feel confident that if the learned judge, whose dictum is quoted, had known what castration involves, not alone the mere fact of the removal of the organs of generation, but all the various points connected with the operation, he would never have given the decision referred to. The subject is not a new one, nor is the question one of recent date. It has been considered by the courts in Europe, and discussed before various commissions, when matters pertaining to the regulation of veterinary practice, titles and claims have been treated, and we feel quite certain that, to-day, it is a point pretty well settled. To say that castration is not veterinary surgery is, it seems to us, equivalent to denying that obstetric practice is a branch of medical science, or orthopedic a part of human surgery; in fact, that any specialty of medical or surgical art is properly medicine or surgery. That "B," while inhabiting a country or a State where the practice of veterinary medicine is unrestrained and unprotected by statute should have a right to continue his business without molestation, may be right and proper "according to law," but if he works at his trade where the law imposes obligations in the way of qualifications, and the practice is regulated by legislation, he undoubtedly becomes amenable to the legal authorities. We believe that if "A's" case were carried up to an appellate court, it might

meet with a different termination, and, in fact, we consider it to be a question of such vital importance to the veterinary profession that we cannot refrain from expressing the hope that an effort may be made at once to obtain a reversal, by higher authority, of the decision of the lower jurisdiction.

MATERIAL FOR THE REVIEW.—Our friends have been so liberal lately in furnishing matter for the columns of the **REVIEW** that it has become impossible to accommodate them all in a single number, and we are compelled by our limitations of space to postpone a portion of their contributions until we have more room at our disposal. In our last number we began the publication of Dr. Williams' report on the *Maladie du Coit* outbreak in Illinois, and we shall continue it until it is completed. We are sure that our readers will study this report with interest. Its completeness and thoroughness render it the best publication of its kind in the English language, and, as after all, there appears a probability that through the constant importation of animals which is now taking place on an extensive scale, the disease may soon reappear, if, indeed, it does not become naturalized among us. Dr. Williams' report cannot but prove a valuable source of information for those who have not yet become acquainted with the peculiarities of this very serious disease.

A paper on the same subject as that for which the **REVIEW** prize has just been granted to Dr. Paquin, viz., "Mad Itch or Enzootic Meningitis of Cattle," and which was presented and read by its author, Dr. J. Meyer, Sr., of Cincinnati, at the last meeting of the United States Veterinary Medical Association, is also waiting for its turn to appear.

And last, but not least, we have a paper on the "Rattleweed or Loco Disease," by our friend Dr. J. P. Klench, which, we have no doubt, will be found to embody valuable information touching that peculiar affection. In a note accompanying his paper, Dr. Klench reports the formation of a veterinary society in California, and we tender, thereupon, our sincere compliments to our colleagues in the Golden State. The Doctor tells us, however, that it requires hard, up-hill work to maintain it, which is to be regretted. The organization of such a body is a benefit to all inter-

estered, and will amply repay all the time and labor bestowed upon its support. But there must be a sacrifice of petty jealousies and personal self-seeking, and disinterested effort and co-operation alone can secure the harmony and effect the results aimed at in its organization. It must not be for the benefit of one alone, or of a few, that such an association should be established. It must comprehend the general good, and, above all, should contemplate the elevation of the profession at large.

We hope at some future, though not remote period, to be able to announce the establishment of a chartered State society in California, and shall anxiously look, not only for the report of such an organization, but also for something of interest in the way of their transactions for publication.

SPECIAL NOTICE.—The new departure of the REVIEW, in reducing the subscription price of our publication from four to three dollars, and our offer in connection with a proposed canvass for new subscribers have made it necessary to address a little circular to some of our friends containing a statement of their indebtedness. Many of them have understood the reasons by which we were influenced in taking this course, and have responded in the way always satisfactory to publishers, viz., liquidating their dues. There are several, however, who have not yet come to the rescue. While we offer our thanks to the former class, we once more make an opportunity to remind the latter of the intent and contents of our last communication.

ORIGINAL ARTICLES.

MALADIE DU COIT.

By W. L. WILLIAMS, V.S.

Report on the outbreak in Illinois to the State Board of Live Stock Commissioners.

(Continued from page 303.)

Causes.—Various authors propound diverse theories as to the primary cause or causes of the disease, but each fails to produce a tangible origin. Amongst the proposed causes may be mentioned

atmospheric conditions, faulty hygiene or dirt, too frequent copulation, or too frequent sexual excitement without sexual contact, crossing of breeds, vaginal catarrh in the mare, etc. But these influences have existed as long in countries where the disease is unknown, as in those where it has prevailed for nearly a century or more, without producing the disease.

Others have imagined its cause to be the fornication or bestiality of syphilitic men with the female ass, as is doubtless practiced by Arabs, in the belief that this bestiality will cure them of their malady, and thence from the ass to the horse by copulation; but against this theory stands the objection already mentioned, that human syphilis is not transmissible to solipeds.

Symptomatology.—Holding that the so-called benign form of the disease, as described by English authors, is a wholly distinct venereal disorder, there is no necessity for detailing here the symptoms of this affection, but I will follow the description of their so-called malignant form, noting such differences as may have presented themselves in the present outbreak. It may be stated, however, that in the so-called benignant form authors describe essentially the same local symptoms as in their malignant type, but assert that these symptoms remain purely local and are followed by recovery in two to eight weeks.

Symptoms in the mare.—In a variable length of time after copulation, usually eight or nine days, the mare exhibits uterine excitement resembling exaggerated vestrum (heat), the vulva becomes swollen, the mucous membrane of the vulva and vagina is reddened and there is a vaginal discharge of at first a serous nature, which soon increases, becomes thicker, sticky, viscid and white, yellow, grayish or reddish in color, which collects about and soils the tail and perineum.

The mare is restless, as evinced by occasional stamping with the hind feet. The urine is voided frequently in small quantities, its passage irritating the already congested or inflamed vaginal mucous membrane, causing increased restlessness. The vaginal mucous membrane continues to grow more irritable and the color becomes a deeper red. The lips of the vulva become more distinctly swollen, the swelling being of an oedematous (dropsical) nature.

Eruptions.—“At this time there appears on the mucous membrane of the vagina, vulva and clitoris, small miliary pustules, which soon become little superficial ulcers, no more than one-fifth of an inch in diameter. These ulcers are not long in cicatrizing but they are replaced by others, which, like the first crop, are most numerous in the fossa navicularis, on the clitoris, and near the margin of the vulva ; the symptoms are intermittent, disappearing for some days and again manifesting themselves, in the majority of cases becoming milder, until they finally disappear.”—(Fleming.)

Unfortunately we have not enjoyed the privilege of seeing cases of less than several weeks standing, but in none of these have we seen the pustules and ulcers above described, nor have we noticed any changes or appearances in the parts that would suggest the prior existence of such eruptions, neither can we learn from the many intelligent horse-breeders, who have had abundant opportunities for close observation, that such eruptions have occurred to that marked extent described by Fleming and others in the present outbreak ; and since Fleming, as previously quoted, describes these pustules and ulcers as occurring more particularly in the so-called benign form, we may well doubt, if not wholly deny, the occurrence to any marked extent of any such eruptions in the affection under consideration, especially when we remember that such eruptions do occur in abundance in the benign venereal disease, with which English authors so hopelessly mix the true equine syphilis.

If any eruptions at all have occurred in the present outbreak they have been entirely within the vagina, very few in number and of very brief existence, and not generally noticeable to an ordinarily close observer.

The swelling of the lips of the vulva is intermittent and variable, extending sometimes downwards along the perinæum to the mammary region (udder) and is occasionally more marked in one lip of the vulva than in the other, giving it a deformed appearance. The mucous membrane of the vagina is red, swollen and wrinkled, appearing unnaturally rough to the eye. English writers describe the frequent occurrence on the external surface of the lips of the vulva, on the perinæum and inner face of the

thighs, of lenticular pustules, succeeded by readily healing ulcers, but no such eruptions have occurred in the present outbreak.

There does occur, however, in a large proportion of cases, a peculiar loss of pigment in the skin of the vulva, perinæum and anus, beginning usually in spots of variable size and shape, gradually enlarging and coalescing until the entire vulva, perinæum and anus may be one continuous white patch, with irregular border, or dotted over with white spots varying from one-fourth to one inch or more in diameter. The vaginal discharge may vary greatly in amount and may cease after a few months, or may persist for a year or more, is usually dirty white or grayish in color, frequently possesses an offensive odor, becomes viscid and glutinous, adhering to and irritating or excoriating the adjacent parts.

Coitus increases the vaginal discharge, as well as aggravates in every way the symptoms of the disease. In many cases there is a marked loss of power in the vulva and vagina, causing an involuntary discharge of accumulated matter from the vagina during sudden exercise.

Incontinence of urine has been noted in a well-marked case of fifteen months' standing, which added to the catarrhal discharge and, adhering to the tail and thighs, made a very repulsive sight.

The most constant and persistent symptoms noted in the present outbreak are the changes in the vulva and clitoris.

The margins of the vulva lips lose their black pigment early in the disease, and is not replaced until after the white spots on the external parts of the vulva, on anus, perinæum and under side of tail have wholly disappeared, which usually occurs after six or eight months. The vulva shows a marked tendency to gape, especially at its lower commissure, due partly, doubtless, to a loss of power in the vulva itself, but mainly to the enlarged clitoris pushing the lips apart; this gaping giving the appearance of extreme age to a young mare. The clitoris is quite uniformly enlarged, exhibiting a smooth shining surface, wholly devoid of pigment and unnaturally dry, there appearing to be a destruction of the mucous-secreting glands of the clitoris and fossa navicularis, or at least a temporary destruction of their secreting power.

Infected mares rarely conceive, and the few that do almost

invariably abort by the sixth month, and in case the foal is carried to the full period, it is almost sure to be weakly and short-lived. There is frequently considerable pruritis (itching), as evinced by rubbing of the tail and hinder parts and licking or biting various parts of the body. Comparatively early in the course of the disease there are frequent edematous swellings of the legs and abdomen.

The inguinal glands may enlarge and even suppurate, and the mammae (udder) occasionally inflame and enlarge. Enlargement of the submaxillary glands (the glands between the angles of the lower jaw) is frequently present and in some cases there is seen a viscid, sticky discharge from the nostrils, closely resembling glanders, which resemblance is heightened by the appearance on the nasal membrane of small superficial erosions or ulcers, and usually associated with the nasal discharge there is observed also a mucopurulent discharge from the eyes.

In the present outbreak, as in those described by German writers, there occurred frequently, suddenly appearing, sharply defined, circular or various shaped flattened swellings, one, two or even six or seven inches in diameter, hard and unyielding to the touch, sometimes painful upon manipulation, at other times causing pruritis, as is indicated by the animal licking or biting at the affected parts. These swellings may appear at any time from eight to ten weeks to the end of the disease and may disappear as suddenly as they came, and others may appear in other parts of the body. In nearly all cases, as the disease progresses, there appear signs of weakness and paralysis, mainly of the hinder parts, at first exhibiting an unsteady gait, the animal bringing the hind feet forward in a difficult, uncertain manner, usually dragging the toes along the ground, or at least striking the ground at the middle of the stride, and in bringing the foot to the ground, placing the toe down first, with the fetlock flexed, which is then extended suddenly as the heel is brought down. This imperfect action may be seen in one or both hind limbs, or may appear first in one, then in the other, then in both, persist for a few days, then disappear entirely, or nearly so, and then return again worse than ever.

Sometimes this lameness is of a spasmodic nature, somewhat

resembling stringhalt, the hocks being suddenly flexed and carried forward with a jerk. As the disease advances the lameness usually increases, the back becomes arched, the hind feet are dragged along the ground, until finally the paralysis becomes so severe that the animal is unable to rise when down, and in their struggles to get up, it is said that fractures sometimes occur in the bones of the loins or hips. Emaciation usually begins early in the disease and increases rapidly when the paralytic symptoms develop, until the animal soon presents a hideous sight, the whole body being wasted to a mere skeleton, in spite of the fact that the appetite remains unimpaired to the last and the food appears to be well digested. Late in the course of the disease there is occasionally seen paralysis of a lip or an ear.

Death may be due to a gradual giving way of the animal powers from the extreme marasmus, or to pneumonia or other accidental complications.

IN THE STALLION

the general symptoms are essentially the same as in the mare, so we will need mainly to consider the local manifestations of the disease in the genital organs. Its commencement is far more insidious in the stallion than in the mare, being in many cases wholly unrecognizable for months. Sometimes the symptoms appear early, while in other cases the development of the disease is tardy and apparently unnoticeable; or, the primary symptoms may appear for a few days or weeks, then disappear entirely and the stallion remain apparently well for months, although he is returned to the stud (which doubtless aggravates the disease) and yet be capable of transmitting the malady at least six months later, probably several years, without affording other evidence of disease. Usually the first noticeable sign of disease is a well marked peculiar swelling of the prepuce, of an indolent, doughy nature, which may extend forward to and implicate the anterior part of the sheath and backward to and including the scrotum, the skin being thickened, smooth and shining. These symptoms may disappear entirely in a few days to a few weeks, and leave no tangible trace of the disease, except the power of transmitting it to other animals, or it may remain for some months or years, either to be complicated with, or succeeded by, other symptoms.

It may be, as stated by most writers, that some stallions do not develop these primary tumefactions, but there is certainly good reason to suspect that, in many of the extremely occult cases, these primary symptoms *did* appear at first, but were attributed to accidental local injuries, such as often occur, passed almost unnoticed, and were soon forgotten by the attendant; months go by and the stallion resumes his work the following year, only to transmit the disease to some of the mares he serves, or by excitement of copulation, to develop the characteristic signs of the disease. At this early stage of the disease, most writers, but not all, describe erosions and eruptions upon the prepuce, penis and sheath, and some eruptions are said to have been seen in the present outbreak, but they were of a very insignificant character, few in number, no successive crops, and all disappearing quickly, leaving no noticeable scar. In most cases no erosions or eruptions were noticed at all, and in the others they were probably due, to a great extent, to accidental abrasions, or erosions due to contact of the discharge from the urethra with the eroded parts, which were usually the penis and prepuce about the preputial ring.

The sheath may or may not become swollen, the swelling may disappear early, or may persist throughout the disease, the swelling when present varying in size, susceptible to unaccountable turns of growth or subsidence, and partaking of the same peculiar indolent character as the swellings of the prepuce, or may be indurated and hard from the presence of suppurating lymphatic glands.

The testicles are in most cases unusually pendent from paralysis of the cremastic muscle, but in some cases they lie close against the external ring, when greatly atrophied, or may even be pushed up into the ring by abscesses or indurations of the lower part of the scrotum. In size they may be normal, enlarged, or atrophied. In the earlier stages enlargement is probably the rule, but in the latter stages atrophy is almost constant, and when apparent enlargement does occur, it is generally due, not to enlargement of the testicle proper (parenchyma), but to a thickening of the coverings of the testicle. In consistency, the testicles are almost always soft and flabby, with an indefinite contour when manipulated.

The penis is said to be sometimes hypertrophied (enlarged) and sometimes atrophied (wasted), but in the present outbreak no marked deviation from the normal size has been noted. Writers also generally mention that in some cases the mucous membrane of the penis may be unnaturally red, or be the seat of bluish or violet elliptical patches, or of yellowish-white marks, probably the result of pre-existent eruptions, none of which have been noted in the present outbreak. In a large proportion of cases there is a loss of retractile power in the penis, so that it usually hangs partly out of the sheath, in the prepuce, or in extreme cases, it may hang at full length, entirely out of the prepuce, wholly powerless.

The sexual desire usually remains unimpaired throughout the disease, and in many animals the power to copulate is but little impaired, but in the earlier stages, during the tumefaction of prepuce and penis, either from excessive erection or other cause, the stallion fails in many cases to effect coition, and late in the course of disease the same inability may arise from loss of power in the penis or from the extreme paralysis of the posterior parts.

The urethral opening may be normal, or abnormally red and swollen, and in some cases there is a muco-purulent discharge from the urethra, while in others there are occasional involuntary emissions of semen, mixed with mucus and pus, containing a few dead or very inert spermatozoa. *Urination* is usually frequent and attended with some pain, and the urine may vary from normal to thick, yellowish, viscid, etc., or be mixed with mucus or pus from the urethra. In some cases polyuria or diabetes is well marked.

Emaciation, with dry, staring coat, is noted in a majority of cases as the malady advances, but is not uniformly seen and is usually of a more or less intermittent character, progressing rapidly for a time, then halting, perhaps improving, when the emaciation again sets in with increased virulence, being especially marked in the hind quarters. The symptoms of paralysis and intermittent lameness in the posterior parts appear much the same as in the mare. There is a swaying, unsteady gait, as if the loins were affected, lameness in one or both hind legs, and a jerky, stringhalt like gait.

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epileptiform convulsions in the stallion, when approached by a mare, in which the stallion is seized with spasmodic trembling, rigidity of the muscles of the neck, convulsive shaking of the head, dilatation of the eyes and nostrils, rolling of eyeballs, etc. In one stallion (VIII) there was a marked loss of voice, an excessively glutinous nasal discharge, large nodulated submaxillary lymphatic glands, and distinct superficial erosions on the nasal mucous membrane.

Pruritis is usually more marked in the stallion than in the mare, causing him to rub or bite violently the feet, pasterns, or other affected parts, producing large unhealthy sores. The elliptical welt-like swellings of the skin are usually also more marked in the stallion than in the mare. There is also a strong tendency to suppuration of the inguinal and scrotal lymphatic glands. The inguinal glands, in some cases in the present outbreak, were the seat of extraordinarily large abscesses, in some cases filling up the entire groin and causing excessive swelling of the scrotum, extending down almost to the hock joints, and when the abscesses finally ruptured, they discharged near a gallon of thick, curdled pus. The lymphatics of the sheath and scrotum were still more prone to suppuration, but the abscesses were tardy, indolent, and usually not very extensive, but their presence frequently caused extensive indurations, pushing the testicle upwards toward the inguinal ring and occupying the ordinary position of the testicle, could be readily mistaken for that organ. In one stallion (XVIII) there is marked paralysis and atrophy of the extensor muscles of one forearm (*extensor metacarpi magnus* and *extensor pedis*), which may be due to the disease, but more likely to accidental injury.

Course and termination. The course of the disease is very prone to remissions and exacerbations, progressing slowly in the majority of cases to a fatal termination.

Recovery may and does occur even after extreme emaciation and when paralysis has been so complete that the animal could not rise without assistance.

The duration of the disease may extend from three months to as many or more years, and recovery, either apparent or real, take place at any intervening time.

(*To be continued.*)

SHEEP DISEASES: THEIR CAUSES, NATURE AND PREVENTION.*

BY THOMAS WALLEY, M.R.C.V.S.

(Continued from page 322.)

In addition to blood diseases proper we have also to notice those due to parasites:

Disease-producing (pathogenic) parasites form two classes, *viz., vegetable and animal parasites.*

Vegetable parasites are again subdivided into two important classes—(1) *Mould fungi* (hyphomycetes and blastomycetes); (2) *fission or cleft fungi* (schizomycetes); and in reference to these fungi the remarkable fact may be noticed that they are identical in form (morphologically) with the fungi by whose agency the various processes of decomposition of organic matter in the soil are carried on; the former class requiring a liberal supply of oxygen, are found on the surface, the latter in the deeper strata of the soil.

Those fungi which are engaged in such beneficent processes as the breaking up of organic matters for the use of vegetables are, so far as we know, *innocent* in character, or non-pathogenic; but grave doubts have been entertained by many as to their innocence under all circumstances; indeed, some pathologists insist that innocent organisms do sometimes contract destructive properties and it would be difficult to prove otherwise; if there is any truth in the theory of evolution as applied to the higher, there is no reason why the theory should not apply equally to the lower organisms.

The ordinary *eruptive diseases* are aphtha, ecezema of the lips, and so-called carbuncle of the lip and the coronets.

Of *aphtha* or *thrush* we have two forms, *viz.*, a benign and a malignant—the former attacking lambs usually, the latter also being seen in ewes, and when so occurring being propagated from the ewes to the lambs by the medium of the milk.

Mild aphtha is attributed to a fungus designated the “*odium albicans.*” The malignant form is also probably due to a fungus.

* Transactions of the Highland and Agricultural Society of Scotland.

The former is characterized by a whitish furred eruption in the mouth, with a little fever and diarrhoea, and runs its course quickly without producing any material injury to the system. The latter is accompanied by malignant eruptions in the mouth and on the lips, bleeding ulceration, and often great destruction, with eruptions about the body, diarrhoea or dysentery, and even putrefactive fever, and the formation of abscesses about the head and in the lungs (pyaemia).

These diseases are often looked upon as contagious in character; the truth is, probably in most cases, that they are all produced by the same cause, *i. e.*, originating outside the body.

Eczema of the lips (*eczema labialis*) is usually attributed to the irritation of fine particles of gravel or sand, aggravated by long-continued wet: but while recognizing this as a cause, I am of opinion that in some instances it is due to indigestion or to stomach irritation, and probably to the irritating action of pollen-grain. Of itself, eczema is a mild affection. It occurs in the form of crops of small bladders (vesicles) in the lips, accompanied by some local inflammation and slight fever. If it is neglected, or the cause allowed to remain in operation, serious results may and do ensue. The lips become enormously swollen, misshapen and tender, and the skin chapped and ulcerated; small abscesses form along the sides of the face, and in the long run suppuration of the glands of the neck takes place; the lungs also become the seat of abscesses, which produce death and render the carcass not only useless, but dangerous if consumed by man.

Whenever eczema makes its appearance the pasture should be changed, a little laxative and alterative medicine administered and some protective agent, such as carbolised lard, smeared over the lips of the affected animals.

Carbuncle is not of such frequent occurrence as eczema, but it is common in lambs, especially during the autumn months, in certain districts. It is commonly known as "hair and hoof" and "orf"; and while the lesion is not strictly of a carbuncular character, I have retained the term on account of its use being warranted by custom.

The actual nature of the disease has not yet been explained;

but, judging from its characters, I am of opinion that it is due either to a depraved condition of the blood as the result of injudicious management, to irritation of the stomach and bowels, to a microscopic parasite acting locally, or to some parasitic product, such as ergot, acting systemically.

Like eczema it is ordinarily of a mild character, but if neglected it may lead to deep-seated and destructive inflammation of the involved organs; ultimately producing death by exhaustion or by blood poisoning.

The disease makes its appearance at the outset as a painful circumscribed swelling on the coronet or lip, or both. In due course ulceration of the skin results and an angry looking sore, associated with considerable thickening of the surrounding tissues, is formed. If properly treated this sore quickly heals, but if irritated by dirt or other material it takes on unhealthy action, spreads to surrounding tissues, and becomes very intractable.

The measures recommended in reference to eczema should be also adopted in dealing with this affection.

Of the extraordinary diseases believed to be due to fission or cleft fungi, we have two forms, viz., those which are *non-contagious* and those which are *contagious*. The former are mainly the class of disease marked by putrefaction and blood poisoning (septicæmia), and which have already been largely alluded to. Contagious diseases proper, peculiar to sheep in this country, are fortunately few. So far as we know, they are largely exempt from consumption (tuberculosis), from glanders and from pleuro-pneumonia; they are, however, highly susceptible, though only secondarily, to foot-and-mouth disease, to malignant catarrh, to dysentery and to anthrax.

Malignant catarrh is often very destructive to hill sheep, especially in bad seasons, and it is very intractable. Beginning, apparently, as a simple cold, it is quickly followed by destructive inflammation of the lining of the nostrils and ulceration, which is again succeeded by abscesses in the glands of the face and throat, and in the lungs; and, if the animal lives long enough, by emaciation and diarrhoea. The particular form of fungi or germs to which it is due have not yet been recognized,

but that it is fungoid in origin is almost a certainty, and it is probable that the fungus belongs to the spherical form of bacteria—that it is a micrococccus.

Dysentery appears usually among sheep in hot summer weather with excess of moisture, and on rank pastures or on overstocked and consequently befouled pastures; and in droughty summer on lands upon which there are stagnant pools of water with rank growth of grass around their borders. Even in the dysentery of man the exact nature of the disease has not been determined, but it is generally thought that it is due to a fungus. Shepherds entertain such strong views as to its contagious character as, in many instances, to lead them to smear tar on the noses of their sheep; they had better smear it on the skin under their tails, or remove them from the contaminated pastures and apply a top-dressing of lime or salt.

Anthrax—so-called from a “live coal” owing to the dark color of the local lesions—is the most deadly of all this class of diseases, and does not confine its ravages to one particular kind of animal, but distributes its favors impartially. So-called “red braxy” is often nothing more or less than anthrax. The labors of biologists have made us intimately acquainted with the nature of this disease, and its literature is simply enormous. Moreover, it is the disease the discovery of the character of which has led to such important results in reference to other germ disorders.

It is due to a minute staff-like organism, termed from its shape a *bacillus*, and belonging to the class of fission fungi. It is, on the whole, the largest of this class of fungi found in animals and in the blood streams and tissues multiplies only by fission, but when cultivated in proper media, or, what is of more importance to farmers, when it gains access to suitable soils, it multiplies rapidly by spores which by various agencies find their way on to vegetables grown on such soils and into drinking water, and produce the disease in other animals that may take in the contaminated food and water. These organisms, and particularly their spores, are possessed of a wonderful vitality and retain their destructive properties for a very considerable period in the earth; hence the necessity of thoroughly destroying every part of the

carcass, the blood and the internal organs of animals which have suffered from the disease. It is propagable to the human subject and is known under various designations in many parts of the world. There is reason too to believe that it may be disseminated by artificial manures, and sometimes even by artificial foods, as it often appears in situations where it has never before been seen.

Black-leg is a disease somewhat allied to it, but the organism that produces it is of rather a different character and it is much less virulent.

Sheep-pox is a disease probably unknown to most of the present generation of breeders, and I sincerely hope it will long remain so. With the precautions at present taken by the Privy Council authorities there is little probability of its being introduced into this country, as it is purely an exotic disease.

Pleuro-pneumonia is peculiar to the ox, and no person has as yet succeeded in transmitting it to any other animal, though statements have recently been made by certain parties to the effect that sheep suffer from contagious lung disease. In a very wide experience, I have never yet met with any outbreak of lung disease in sheep the characters and cause of which warranted me in attributing to it, even in the slightest degree, contagious properties. I have been able to trace all such cases as have come under my notice to purely local causes—to, in fact, improper management in the way of feeding, associated with exposure to cold and wet and to rapid alternations of temperature.

In many instances the foundation for lung disease is laid at birth, the lungs, owing to the lowering influence of cold or cold and wet, never being properly inflated. Lung disease of this class is more prevalent in some districts than others and particularly in exposed localities; and this fact points to the necessity of providing sheep, when possible, with artificial shelter in bad weather.

The animal parasites of most importance to breeders of sheep are those associated with rot, with sturdy and with hoose. Tape-worms and round-worms in the intestines are also sometimes the cause of great losses.

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Rot is due to a flat worm known as the fluke (*Distoma hepaticum* or *Fasciola hepaticum*), which inhabits the bile ducts of the liver and there sets up extensive inflammation, from which result various organic changes, such as hardening and softening, leading in the end to annihilation of its function and, as a result, emaciation, anaemia, dropsy, diarrhoea, and death from exhaustion; in cold nights following warm days numbers die from congestion of the lungs as the result of chill.

A few of the more important features only of the worm and its life history can be here alluded to.

The worm itself is bisexual (hermaphrodite) and is propagated by eggs which are passed out with the bile and the dung in countless thousands and lodge upon the grass or other places. If the eggs fall on to dry soil, no harm results; if, on the contrary, they fall on wet places the disease is propagated to other sheep.

The egg is oval in shape, has a lid (operculum) at one extremity and contains an embryo which, when fully matured, is provided with delicate hair-like processes known as cilia. The lid of the egg-shell, partly by the agency of moisture, partly by the movement of the contained embryo, is lifted and allows of the escape of the latter, when it at once begins to move actively about in search of a host in the form of a particular snail (the *Limnaea truncatulus*), whose body it penetrates by the aid of a boring apparatus and there becomes encysted and during its residence therein it undergoes a series of wonderful changes in form, passing through several generations, until a tadpole-like creature is produced, which after gaining its liberty encysts itself at the lower parts of the blades of grasses from whence sheep pick it up in the process of grazing; ultimately it finds its way into the liver.

Sheep are more susceptible to rot than are other animals, simply because they bite closer—a hog-mouthed sheep escapes; but cattle, and very many of them too, and occasionally in wet seasons colts also, suffer from the ravages of the fluke.

Rot is never seen on dry lands nor on salt marshes, and even rotting grounds are safe after a frost.

The lessons to be learned in reference to rot are—1st, that it

cannot occur on dry lands, because there are no snails there—hence the value of draining; 2nd, that salt is a preventative, because it kills snails as also the embryos of the worm; 3rd, that rotten sheep should be at once slaughtered, their excrements mixed with lime or salt and the liver and intestines carefully destroyed. Its existence can be detected early by the victims thriving very rapidly and by the membrane of the eye contracting a yellow tinge (jaundice).

Sturdy is due to the presence of a bladder worm in the brain and is so called because the animal is stupid, a synonymous term in Norfolk being *dunt*; and if the victim turns round to one side it is known as *turn-sick*, *gid*, &c.; while, owing to peculiarities of gait, affected sheep are often spoken of as "sailors," "trotters" and "swervers."

The bladder worm, or hydatid, is the immature form of one of the tape-worms of the dog (the *Tænia cænurus*); it is known as the *many-headed hydatid* (*Cænurus cerebralis*) and sheep become the victims of it by taking into their stomachs, in the ordinary act of grazing, the eggs (containing embryos) of the tape-worm.

The embryo ultimately finds its way to the brain either by the circulation or by boring, and sometimes it gains access to the spinal cord in the neck and produces the condition known as "thorter-ill."

From the fact that in some districts a very large number of cases of sturdy are seen, I have been led to form the opinion that there must be some other host of the particular tape-worm than the dog, and of all animals the fox is the most likely.

The treatment of sturdy is often very successful, both by simple tapping and by extraction of the bladder-worm, but it is simple madness to allow a sheep to pine away with the disease, as many do, until it is useless; better by half kill it as soon as it shows symptoms of the disease and make the best of it.

As to the prevention of sturdy, the first and most important thing to do is to carefully destroy the brains of affected sheep, instead, as is often done, throwing the "bleb" to the dog to eat; and secondly, to keep dogs as free from tape-worm as possible.

Hoose is due to a round worm (the *Strongylus filarius*) which when mature resembles a piece of white thread and the female of which is about $1\frac{1}{2}$ to 2 inches long. It inhabits the wind-pipe and bronchial tubes, but its embryos gain access to the deeper parts of the lungs and there set up much irritation and patchy inflammation.

In the lungs of thousands of sheep, not only native but American also, killed in our slaughter-houses, numerous small nodules of a yellowish color and about the size of a millet seed are seen; these have often been mistaken for tubercle (consumption) but the microscope reveals the embryonic parasites in their interior.

The development of the worm is not understood; one thing, however, is certain, viz., that salt spread over the contaminated pastures is a sure preventive; drainage also is useful, but sheep should not, if it can be avoided, be put on infected fields.

The lungs too of affected sheep should be destroyed instead, as is often the case, being sold or used as food for people or for cats. Cooking certainly kills the parasites if it is effectually carried out.

Many sheep suffering from hoose die from debility induced by diarrhoea; others die from suffocation and many from congestion of the lungs, if exposed to a chill.

Another round worm, the twisted strongyle (*Strongylus contortus*), is often the cause of great loss amongst sheep. It is a small worm like a piece of red thread and is found clinging, by the aid of barbs, to the membrane of the fourth stomach, there causing inflammation, diarrhoea, emaciation and death.

It is most seen on old pasture land where there is plenty of fog for cover, and this fact points to the necessity of removing the fog from such pastures by burning or by chain-harrows. Top-dressing with lime or salt should also be practiced.

The only tape-worm of importance found in the sheep is the *Tenia expansa*, but it is questionable if it does much harm and I have seldom found it unassociated with other parasites.

In conclusion, I would say that no man can be a successful sheep farmer unless he has some knowledge of the structure of the animals he deals with (histology) or of the functions of the

different organs of its body (physiology); like the machinist, he must not only make himself acquainted with the wheels and pistons and cranks of his machine, he must know its every fibre; and even as machines are easily deranged so sheep are "kittle cattle"; no more delicate animal breathes.

In addition to the above, the farmer must have a knowledge of the chemistry as well as of the practice of agriculture and if disease makes its appearance amongst his flocks he should at once seek the aid of some one better versed in these matters than himself.

SNAKE BITE AND ITS ANTIDOTE.—IV.

EXPERIMENTS WITH CROTALUS VENOM AND REPUTED ANTIDOTES, WITH NOTES ON THE SALIVA OF HELODERMA
(“GILA MONSTER.”)

BY H. C. YARROW, M.D., Curator Dept. Reptiles, U. S. National Museum.

(*From Forest and Stream.*)

(Continued from page 327.)

Were it not for the fact that many persons still believe in the antidotal efficacy of ammonia in snake bite poisoning it would not have been thought worth while to experiment with this agent any further, and a number of observers from the time of Fontana to the present day have proved not only its absolute uselessness, but have also shown that under certain conditions of administration it is dangerous to life. Weir Mitchell says that in one case he thinks he actually destroyed a dog with the means which was meant to save him, and our experiments, it is thought, will show a similar condition of affairs. To Dr. Halford has been attributed the method of cure of venom poisoning by ammonia, but this is an error, as has already been shown in this paper, and if further proof is wanting it may be found in the *Medical Times and Gazette*, London, 1873, ii., p. 216, which gives the translation of a letter written by Felix Fontana to Mr. Gibelin, dated Florence, July 1, 1872, in which he states he experimented upon lambs and rabbits, using from twenty to forty drops of ammonia injected into jugular vein; none recovered. He also states that twelve

experiments may not be sufficient to show the absolute inability of ammonia as an antidote, but they show it is not a specific. In his work on poisons, p. 3, he says in reference to its use externally or internally, "It is then a fact proved that ammonia is entirely useless whether applied simply to the bitten part or whether taken internally, and there is even reason to suspect that it was hurtful."

Inasmuch as Dr. Halford revived an interest in the ammonia plan of treatment, it seems only fair to give a resumé of his plan of treatment, which will be found in his pamphlet entitled, "New Treatment of Snake Bite," by G. B. Halford, Melbourne, 1869, p. 16, in which he recommends the bite to be cut out, and when symptoms of drowsiness or sickness come, inject ammonia ten drops to twenty of water into vein (adult dose) with hypodermic syringe pointed toward heart (does not mention care to be taken to avoid air entering vein). Gives a number of examples. Speaks of injecting ammonia into right and left ventricles of heart, carotids and jugulars, the dog being under chloroform. Half dram liquor ammonia B. P. sp. grav. 0.959 every fifteen minutes or so for several hours. Dogs not injured but were finally killed, as chest had been opened.

He again discusses the subject in the *Medical Times and Gazette*, London, ii., p.p., 90, 170, 224, 323, 461, 575, 712, and gives a number of apparently well authenticated cases.

Average length of time it takes to kill dogs with cobra bite according to Halford is 3h. 23m.; *Haplocephalus curtus* 2h, 15m., fowls by cobra 18m. Some die in much shorter time.

Fayrer found that the injection of ammonia into the veins of healthy dogs was followed by grave consequences, such as convulsions and marked muscular prostration, and no immunity was produced when the animals were bitten by cobras. He thought the ammonia treatment hastened death, and Healey, (G. D.) and Rees (W. C.) report a case of snake bite in the Australian *Medical Journal*, 1874, XIX., p. 49, in which ammonia was injected into the veins and brandy given internally, which resulted in death.

In our own experiments, believing that the venom, or at least a part of it, remained in the vicinity of the wound and was grad-

ually absorbed, instead of injecting ammonia into a vein it was thrown into the tissues contiguous to the part where the venom was injected, with the following result:

Nov. 4, 1887—12:53 P. M.—Injected a strong, healthy pigeon in the right side of the breast with 3 minims of glycerine venom, followed at once with 25 minims of ammonia solution.

12:55 P. M.—Bird died, having had tetanic spasms almost immediately after the last injection. The post mortem examination showed the heart to be empty, and much fluidity of the extravasated blood in vicinity of wound was noticed.

Inasmuch as it had been shown by previous experiments that a lethal dose of 3 minims of glycerine venom requires a much longer time to produce death in pigeons, the supposition naturally arose that perhaps the ammonia itself was the cause of death, and the following experiment was tried a few days after:

Nov. 8—12:11 P. M.—Injected 25 minims of ammonia solution in breast of healthy pigeon.

12:13½ P. M.—The pigeon fell over backward from its perch, gave a convulsive struggle, and died in half a minute.

Five minims of glycerine venom were thrown into the leg of a rabbitt, followed by thirty minims of ammonia solution, and the rabbit perished in five minutes.

The question may well be asked, if Halford's solution of ammonia has such a startling effect when injected into the tissues, what would be the result of throwing it directly into the veins? The evidence being so conclusive regarding the ineffectiveness of ammonia as an antidote, no further sacrifices of animals were made.

Among the many remedies that have been recommended in snake bite, the different species of *Euphorbia* hold a prominent place, in fact in the Western States and Territories it is believed a specific not only for man but beast, as has been stated to the writer by his friend, Capt. Chas. Bendire, U. S. A., and that this belief was held by our trans-Atlantic brethren is shown by the following statement of Dr. Hurant, *Jour. de Chem. Med. Pharm. et Toxicol.*, Par., 1839, 2 s., v. 272.

While botanizing in the country a favorite dog was bitten by a viper; fortunately close at hand he found the *Euphorbia Cy*

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parissias, and having expressed some of the juice, he pressed it into the wound and applied the bruised leaves. The dog recovered.

Dr. B. J. D. Irwin, U. S. A., *A. J. M. S.*, Phila., 1861, n. s., p. 89, speaks of using *Euphorbia Prostrata*—called Gollindri-
nera by Mexicans. Gave four fluid ounces of a watery solution of *E. p.*, and applied bruised plant to wound—repeated dose in one hour. Animals recovered. Other *Euphorbias* said to be useful: *Capitata, correliata, palustris, and villosa.*

In view of these statements it was determined to try the anti-
dotal effect of *Euphorbia*, but unfortunately only one species could be obtained at this season—*Euphorbia maculata*, of which a strong tincture was made, and to ascertain if it possessed itself poisonous qualities, at 12:45 P. M., Nov. 12, 1887, a healthy male rabbit received in right hind leg a hypodermic injection of 50 minims of the tincture, and no unpleasant symptoms were manifested, the animal having been carefully watched. Nov. 14 he was perfectly well. The next experiment was as follows:

Nov. 12—12:30 P. M.—Injected 5 minims of venom solution in hind leg of rabbit, followed at once by 50 minims of alcoholic tincture *Euphorbia maculata*, and 2 fluid drams given by stomach, and wet pad of tincture applied over wound.

12:35 P. M.—When released animal was very feeble, hardly able to stand.

1:15 P. M.—Gave rabbit 1 dram of tincture *Euphorbia* and 1 dram of water per mouth; animal very weak.

1:20 P. M.—Rabbit very nearly dead; respiration fast; has lost all motion.

2:15 P. M.—Rabbit quietly died; very little swelling or discoloration of the part injected.

This single experiment is given for what it is worth, and can hardly be considered as a fair test, but efforts will be made to obtain the species of *Euphorbia* mentioned as an antidote by Dr. Irwin, and its effects will be further investigated.

Dr. Robert Fletcher, in his valuable paper entitled, "A Study of some Recent Experiments in Serpent Venom," in the *Am. Jour. of Med. Sci.*, 1883, n. so., LXXXVI., 144, mentions a case

reported by a French physician, of a person bitten by a viper, in which the very grave symptoms developed had been cured by the administration of jaborandi, which produced copious salivation and perspiration, the dangerous effects of the venom gradually disappearing.

This case was looked up and was found in the *Gaz. Hebdom. de Med. et Chir.*, Par., 1882, XIX. 835, the reporter being Dr. Joso. He states that the patient was bitten by a viper between the thumb and index finger, and that when called to see her, all the characteristic dangerous symptoms of poisoning from snake venom were present, notwithstanding that phenic acid had been freely used as a supposed antidote. Having seen an account of the use of jaborandi by the South Americans in snake bite, he determined to give it a trial, and four grammes of the leaves were infused in a glass of water and given at 2 p. m. of the 13th inst., and on the 14th the patient was well with the exception of pains in the arms and some swelling, which lasted for three weeks after the accident. As already stated, copious salivation and perspiration were produced, but no mention is made of any action upon the kidneys. As no other cases had been reported, and the writer being aware that venom was supposed to be eliminated by the skin and kidneys, he determined to examine the subject thoroughly. The testimony, so far as could be ascertained, is as follows:

Dr. B. S. Barton in "An account of the most effective means of preventing the deleterious consequences of the bite of the *Crotalus horridus* or rattlesnake" (sm. 4to. Phila., 1792), speaks of the use of the common garden rue (*Ruta Graveolens*) as used by the Indians of New Jersey to produce copious perspiration as a cure for rattler's bite, giving two tablespoonfuls of the juice every two hours until violent sweating was produced. The author thinks it may have been of service. In some cases after a bite, a ligature was applied above the injured part, wound scarified, and salt and gunpowder laid in the wound, over the whole being bound a piece of white walnut bark (*Juglans alba*). Early settlers do this. The salt and gunpowder excite a discharge of blood from the scarified part, especially of serum, and the white walnut bark possesses the evacuant power of cantharides, and contributes to

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the further discharge of the serum, and with it the snake poison. He gives quite a long list of plants which have been used and recommended.

Dr. A. Coutance, in his work entitled "Venins et poisons," 8, Paris, 1888, p. 178-179, speaking of a dog bitten to death by a *fer de lance* says: "A cubic centimeter of urine from a dog, dead from the bite of a *Trigonocephalus*, was injected beneath the skin of a rat, which died the next morning. The kidneys are therefore, as believed by Lauder Brunton and Fayerer, a means by which serpent venom is eliminated. Richard Balsamos killed pigeons by inoculating them with the urine of dogs which had been bitten in India by venomous sea snakes, but it is a question if normal urine might not produce the same effect by reason of the ptomaines contained therein."

As some non-professional readers may care to know what jaborandi is, and what effect is produced by it, the following short summary is given:

Jaborandi is an extract made from dry leaves of *Pilocarpus pennatifolius*, a South American plant, its properties being due to a volatile oil and two alkaloids, pilocarpine and jaborine.

Dose: Extract, gr. ii-x.

Dose: Infusion, f. oz. ss.

Dose: Pilocarpine nit., gr. $\frac{1}{4}$ -ss.

Dose: Tincture of jaborandi, U. S. Ph., f. oz. $\frac{1}{2}$ -1.

Dose: Ext. pilocarpi fl., M. 5-60.

"Pilocarpine stimulates the peripheral terminations of efferent nerves going to glands, and first stimulates and then paralyzes the efferent nerves going to structures composed of involuntary muscular fiber. In large doses it lessens, but does not quite destroy the irritability of voluntary muscles and motive nerves."—(Lauder Brunton.) It increases flow of saliva enormously, the secretion of sweat and excites the secretion of tears, cerumen in ears, mucus from nose and from bronchial mucous membrane, of gastric juice, intestinal juice and urine from the kidneys. Upon the circulation: Vessels become dilated at first, pulse rapid, feeling of heat over the body. Blood pressure falls a little at first with quicker pulse and rises with a slower pulse. Respiration is in-

creased, with dyspœa. Is used as a cardiac stimulant when digitalis fails."

Now, as will be seen from these statements, this South American plant really seems to possess all those properties which might be supposed necessary to constitute a true physiological antidote to serpent venom, and so far as our limited experiments go, there appears to be good warrant for such a belief, as in all of our experiments the so-called antidote was first tried on healthy animals, without producing any ill effects. The first experiment was as follows:

Nov. 28—12:20 A.M.—Injected 5 minims of solution rattlesnake venom into left leg of strong rabbit, following immediately by 10 drops of fluid ext. jaborandi, in 10 drops of water; and 10 drops jaborandi and $\frac{1}{2}$ oz. water was forced into the animal's stomach with a syringe.

2:30 P.M.—Animal slightly lame in the injected leg, holds it up when walking; but eats well.

Nov. 29—11 A.M.—Animal still a little lame, slight swelling and tenderness of the injected leg—otherwise seems to be in good condition.

Nov. 30—11 A.M.—Animal in about the same condition as yesterday—but improving.

Dec. 1—11 A.M.—Animal slightly lame; a hard tumor formed at the seat of injection.

Dec. 2—11 A.M.—Animal in same condition as yesterday; appetite normal.

Dec. 5—Swelling entirely gone, animal perfectly well.

It was noticed in this case that the animal urinated freely and very frequently, and that the mouth and nostrils were very moist. Chickens and pigeons being peculiarly susceptible to venom it was determined to try the effect of the jaborandi upon them, and on

Dec. 3—12:30 P.M.—Injected 5 minims of *Crotalus* venom into the leg of a chicken, followed by 10 minims of fl. ext. jaborandi, in water, by the stomach.

1 P.M.—Chicken appeared not so well, lying down. Gave 10 minims more of jaborandi in stomach.

3 P.M.—Chicken standing up, and feathers drooping. Does not seem very sick.

Dec. 5—10 A.M.—Chicken found dead, probably died during the night, as it was alive yesterday (Sunday) at 1 P.M.

In this case it may have been that not enough of the jaborandi was given to overcome the double lethal dose of the venom, but the experiment shows that life was prolonged after a dose of the venom which if allowed to act without hindrance would have destroyed life in about two hours. Another experiment was tried upon another fowl, a smaller dose of venom and a larger amount of jaborandi being given, but the chicken only lived two days. These two experiments would seem to show that in the case of fowls poisoned by serpent venom, jaborandi has only the effect of prolonging life. To verify the former experiment upon a rabbit it was resolved to again try the antidotal effect of the drug with the following result:

Dec. 5—12:05 P.M.—Injected 10 minims of rattlesnake venom solution into right leg of rabbit, followed by 15 minims of fl. ext. jaborandi; also give 15 drops jaborandi, in water, in stomach.

12:15 P.M.—Rabbit sluggish and indisposed to move. Respiration hurried, and animal seems very sick.

12:30 P.M.—Gave 15 minims more of jaborandi hypodermically.

Dec. 6—Rabbit appears perfectly well and is eating. Copious discharge of serum from wounds made by syringe, and a good deal of urination.

Dec. 8—Rabbit appears perfectly well, but has a healthy looking raw surface near point of injection on leg, which is healing.

Dec. 10—Rabbit well, excepting ulcer, which is healing.

Dec. 12—Perfectly well.

One more experiment was tried upon another rabbit, in which a fourfold lethal dose of the venom was injected, viz., 20 minims followed by 60 minims, at intervals, of jaborandi, with 60 by stomach, the animal recovering perfectly. From the foregoing experiments with the fluid extract of jaborandi it will be seen that while this substance appears to have antidotal effects upon

rabbits, in fowls it fails, as has already been stated, but it is intended to pursue this line of experimentation still further, especially with the active principle known as pilocarpine. It may be mentioned that a medical man of Washington city is so convinced of the efficiency of the jaborandi that he has offered himself for the purpose of an experiment with venom, and in addition to this offer, the writer has received a communication from a person in Ohio, also, proposing to submit to the test. Until we have experimented further, however, the scientific devotion of these gentlemen will not be tried.

(*To be continued.*)

THE THERAPEUTIC VALUE OF WATER.

BY DR. ANACKER.

(Translated from the *Thiezarzt* by F. W. Turner, Ph.G., Student.)

The employment of water in cases of sickness dates back about two thousand years, when Petron established his famous "cold water cure" system. Later on Musa, and recently Hahn and Priessnitz brought it into fresh repute.

Its curative power depends principally on the temperature at which it is used, and also on its solvent power on organic and inorganic bodies. The cold water cure consists in drinking water and in wrapping the body in wet linen sheets which are covered with woolen blankets till perspiration ensues, this procedure being followed by cold baths and brisk bodily movements. No doubt Priessnitz claimed too much when he pronounced water to be the universal remedy for disease, since there is no remedy which possesses the virtues of a panacea. We meet with numerous difficulties in the systematic application of cold water in veterinary practice, for the reason that hydrotherapy has had but a limited employment in the treatment of domestic animals.

Water acts locally according to its temperature. Cold water condenses the organic fibres and the vascular membranes, producing an invigorating effect upon the relaxed tissue, especially on the skin, muscles and sinews, and drives the blood out of the ves-

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sels, the parts becoming anaemic, and their temperature lowered. Water acts as a refrigerant and diminishes pains in inflamed parts. A long continued employment of cold produces reflex trembling, a decrease of the respiration and of the action of the heart, and increases the pressure of the blood by driving it from the periphery to the internal parts. As a drink, water not only reduces the temperature of the stomach and intestinal canals, but of the whole body, through its absorption into the blood. This becomes diluted, and, as in the case of all excretions, histogenetic changes take place more rapidly, the urine is discharged more copiously and the faeces may be diluted to an actual diarrhoea. The lungs, kidneys, skin and intestines eliminate excessive quantities of water, if the latter has been taken in too large a quantity. Warm water softens and relaxes the organic fibres; when given internally it acts as a diaphoretic, and consequently is beneficial in the first stages of rheumatic and catarrhal troubles. Larger quantities of warm water, when introduced into the stomach of the dog, cat or pig, produce vomiting. This fact deserves our attention in cases of poisoning, where it at once dilutes the poison, neutralizing and to some extent eliminating it. Hot water vapor at a temperature of 180° to 220° Fahrenheit destroys in five to thirty minutes all infectious substances, for which reason it is a reliable disinfectant. Cold washings and cold baths strengthen the skin and make it more resistent to changes in the temperature and to climatic influences. In cool weather it is necessary to rub the bathed or washed parts dry. Cold washings of the soles and hoofs of horses is very beneficial after a day's work on hard paved streets; it gives great relief to the relaxed and fatigued state of the extremities.

Superficial bleeding may be stopped by dropping cold water on the bleeding surface, because the small capillary vessels will contract sufficiently to help the formation of a blood clot, whereas bleeding from larger vessels may be augmented for the reason that the water washes away the blood and stops the formation of a clot. Snow and ice possess, on account of their lower temperature, more energetic astringent, haemostatic and antiphlogistic properties. Cold water is frequently employed as a foot bath, or

as a poultice in inflamed conditions of external and internal parts and organs of the animal body. In making these applications care should be taken to renew them as soon as they become warm, and that they be continued until the inflamed tension in the affected parts is relieved and the pain subdued.

The water itself should be renewed as soon as it gets warm. The addition of vinegar and neutral salts lowers the temperature of the water and increases its solvent power, which is of importance, in cases of bruises, for the absorption of coagulated blood. Applications of cold water are used also in cooling the head in inflammation of the brain, in inflammation of the eyes, in pneumonia, in peritonitis, in inflamed and paralytic conditions of the spinal cord, and in enteritis by using enemata of cold water. Applications of cold water are of vital importance in high fevers (106° Fahrenheit), because they reduce the temperature of the body and increase the strength of the patient. They also prove very beneficial in tympanitis, by condensing the gases present in the digestive canal and toning the seemingly paralyzed and weakened muscles of the intestines, and in this manner help to expel the gas, *per os* or *anum*.

Leister's cooling apparatus, composed of a number of small flexible metallic tubes, fixed or bandaged to the injured part and admitting a continuous stream of cold water, has been used with success in laminitis, in sprains of the fetlock joint, in inflammation of the sinews, muscles or articulations of the extremities, and in cases of fracture of the bones.

Oxygenated water, or the peroxide of hydrogen, destroys bacteria and stops fermentation. Diluted it may be used in the treatment of old and indolent wounds and ulcers, suppurating ears and genitals, in catarrh of the bladder and in diphtheria. It should, whenever possible, be applied on compresses and covered with oiled silk to prevent evaporation and decomposition. Damp heat relaxes the tissues and promotes absorption, relieves the inflamed tension, and consequently subdues the pain, besides rendering the parts to which damp heat has been applied more plethoric, because the heat relaxes the vascular membranes and blood enters more freely. The result of this is a more active circulation of

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the blood and chyle and improved nourishment and increased absorption of fluid matters. Warm baths are of service in cases of atrophy and callosity. The addition of carbonate of potash or soda, or soap, increases its solvent power in chronic and stubborn conditions. The inhalation of hot water vapor moderates general sensibility and assists in the elimination or expectoration of mucus in inflammatory catarrhal troubles of the larynx and pharynx. Abundant drinks of cold water do good service in all feverish diseases, and generally patients will drink pure cold water with relish, nor should they be stinted in the supply. In hydræmic and dropsical troubles, however, and in diarrœa, the use of water as a beverage should be restricted as much as possible, because it dilutes the blood and increases the excretion through the skin, kidneys and intestines. Pachyaæma, polychylia, tendency to congestions and apoplexy, exanthemata, infectious substances in the blood, excessive acidity of the stomach, slow digestion, inflammation of the inner organs, are diseases in which a copious use of water is indicated.

REPORTS OF CASES.

AMERICAN VETERINARY HOSPITAL.

COMPOUND COMMUNITED FRACTURE OF THE TEMPORAL, AND COMMUNITED FRACTURE OF THE SPHENOID BONE.

By G. A. LATHROPE, D.V.S., House Surgeon.

The subject of this case was a roan gelding used for draft purposes, being at the time employed in drawing stone from a cellar; he stood in the street while a blast was being set off, where it was supposed he was out of danger, but a stone was thrown from the blast striking him on the left side of the head; he immediately fell and was unable to rise. They thinking he was only stunned, administered one quart of whiskey, but as he did not rally he was brought to the hospital in an ambulance; after being admitted, as minute an examination as possible was made, he being very violent in his struggles. It was found that

he had received a wound on the external face of the zygomatic process of the temporal bone, making an incision in the skin of about two inches in length ; crepitation could be detected and a diagnosis was made at the time of a compound fracture of the temporal bone complicated with concussion of the brain ; respirations were increased and stertorous ; was very excitable ; if touched would neigh and try to rise ; would lie apparently comatose for a few minutes, then would become violent, his efforts seeming to be to acquire a standing position ; he would raise his head and shoulders, but seemed unable to gather his legs under him, and if assistance was given to him, became more violent than ever. These symptoms continued throughout the night and were the same in the morning, except that there was considerable discharge from the nostrils ; evidently paralysis of the throat was present, and when the whiskey was administered went down the trachea causing the discharge. Upon the consent of the owner he was destroyed and a post mortem held. Upon removing the skin and tissue, which was very much infiltrated with blood, it was found that he had received a compound comminuted fracture of the zygomatic process of the temporal bone, but this of itself was not enough to account for the brain lesions presented by the symptoms, and upon boiling the head it was found that he had also received a comminuted fracture of the left wing of the sphenoid bone, with displacement, which accounted for the brain lesions. It was also discovered that he was suffering with osteo porosis, which had predisposed him to fracture.

AFTER-EFFECTS OF NEUROTOMY ON A PUNCTURED WOUND OF
THE FOOT—SLOUGHING OF THE SAME—DEATH.

By TRITSCHLER, D.V.S., House Surgeon.

The following case, although presenting nothing unusual or uncommon, may prove of interest, since it often serves as one of the arguments which have been brought forward in opposition to the operation of neurotomy, and which have tended to bring that procedure into disrepute with certain parties.

The subject was a chestnut stallion, a runner, four years of age. Attention was first called to him on the 6th of September,

for a supposed slight thickening of the near fore fetlock, unaccompanied by lameness. Upon examining the foot a slight oozing of suppuration was detected at the glome of the frog, with a punctured wound at the side of the frog, midway between its base and apex, the inner side of the sole and the frog being undermined with pus, the coronary structure being also somewhat swollen, evidently induced by accumulations of puriform matter.

The cicatrixes of neurotomy were located rather high, and their presence explained why the real trouble was not suspected by the owner, the punctured wound undoubtedly being of some standing.

Incidentally, it may be remarked that this same patient was brought to the notice of the hospital staff on the 17th of May last for a ring-bone, but refused the operation of neurotomy. Although every effort was made to save his foot, the case went from bad to worse, the separation between hair and horn increasing, the coronet had numerous abscesses from large pieces of the planter cushion becoming gangrenous, the leg finally becoming greatly swollen from the foot to the elbow, temperature becoming elevated but the appetite throughout remaining unimpaired, and when the foot was about to drop off the owner consented to have him destroyed, which was done on the 15th of September.

Upon post mortem examination, the subcutaneous tissue of the entire limb was found infiltrated with serum, the leg below the knee thickened by plastic deposits, the horny wall almost detached, the laminae detached, the inner wing of the *os pedis* necrosed, the bone fractured in two pieces in its center, the planter cushion and the remainder of the tissues of the foot in a disintegrated gangrenous condition. The navicular bone on both its faces covered with dark blue spots. The *os coronæ* had a liberal deposit of bony material, and both nerves at their point of excision presented a well-marked neuroma.

COMPOUND FRACTURE OF RADIUS IN TWO-YEAR-OLD FILLY,
AMPUTATION AND RECOVERY.

BY CHAS. C. MCLEAN, V.S., (Meadville, Pa.)

August 24, I was called to the breeding establishment of Messrs. C. and R. A. Stratton, at Evansburg, Penn., to see a two-

year old filly called Bonnie Janet, sired by Hartwood, he by Harold, dam of filly Bonnie Bessie, by Abdallah Star. On arrival, I found the mare in a large pasture over half a mile from the stable with a compound fractured forearm, both ends of fracture protruding. After advising owners that the only possible means of saving the filly for a brood mare would be amputation of the limb, they made preparations to have her removed to the stable, which was done at once; on arrival, she was cast and sulph. eth. used for anaesthesia; a rapid circular incision with a long-bladed knife on each side made a good flap and left a nice cushion. The anterior and posterior radial arteries were ligated; radius sawed as high as flaps would allow; a large twitch was used for a tourniquet; a cold solution of mercuric bichloride subdued a slight hemorrhage of small vessels; wound thoroughly dusted with iodoform, and flaps closed with strong gut and wire sutures, leaving a three inch space in middle of stumps for drainage; a cold water bandage was applied after dusting entire stump with iodoform, and hobbles and rope were removed; she lay perfectly quiet for one hour and thirty minutes, except some trembling of shoulder muscles, and then made an effort to regain a standing position; on the third attempt she was assisted by three very able stablemen, and was at once led to a large box-stall which had been well cleaned and disinfected; she stood for one hour and ate a hearty meal, and then lay down and rested quite well until 12 p. m.

Being of the same opinion of Prof. Huidekoper of Pennsylvania University about his amputation at Avondale, "that the subject should be taught to depend on herself at once," the slings were not used except on three occasions; when she stood too long, "at one time fourteen hours," they were used to lay her down; on second day she got up without assistance and has continued to do so each day, and as frequently as she desired, and she can get up just as quick as any horse with two fore legs; moves about the stall in a manner surprising to the many curious visitors who have called to see a three-legged horse. The sutures remained twelve days; union of flaps progressed rapidly; suppuration very slight; the swelling from fracture decreased rapidly

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after operation ; dressings consisted of cold water bandages, iodoform freely, and injections every two hours in drainage hole of hydrarg. per chl., one part in 1,000 of water ; her diet consisted of green corn, apples and boiled grain liberally, and the stable surroundings kept unusually clean. She exhibited a great degree of intelligence on several occasions ; in lying down she would forget and drop to the left side, but when she got ready to rise she would roll over on side of remaining member and rise without difficulty ; her temperature never rose above 101° ; pulse after operation 82°, but day following had dropped to 64° and continued to fall to 42°, at which it has remained. The mastoidohumeralis muscle has developed *greatly*, also all muscles of right extremity.

In conclusion, I would say that I am of the opinion that many a valuable stock animal can be saved by amputation when the fracture will not justify treatment by usual methods, and that the wholesale slaughter of animals with broken limbs is utterly uncalled for when breed is valuable for stock purposes ; with posterior extremity there may be a difference with horses, but in cattle I have amputated a hind leg with the best of satisfaction on two occasions.

PATHOLOGICAL PHYSIOLOGY.

SIMILARITY OF SPONTANEOUS AND EXPERIMENTAL TETANUS.

By using the dust of hay, Mr. Rietsch has confirmed the experiments of Nicolaier, Beumer and others, upon experimental lock-jaw, and has developed in a donkey the typical tetanus of equines, the dust being inserted under the skin of four cobayes, which after four or five days died of tetanus. A little pus, taken from these at the point of inoculation, was then used to inoculate two other guinea pigs, both of which died of tetanus thirty hours after. A very small quantity of pus taken from the last two was then used in the inoculation of two others, of which only one presented tetanic symptoms, but recovered. With the pus of one of the last dead guinea pigs cultures were made with gela-

tine and with serum. The first were negative, but the second were at one time very rich in the bacilli of tetanus, and these were used to inoculate on the flat of the thigh a donkey, which after twenty-two days showed lock-jaw and died. Material was obtained from him for the inoculation of eight rabbits, and of these two remained healthy, two died of septicæmia without tetanic symptoms, and the last four died of lock-jaw.

The conclusions reached are, 1st, that the experimental tetanus of equines seems to differ in nothing from the spontaneous disease; 2d, that an actual identity exists between the spontaneous and the experimental disease, and 3d, that tetanic virus may be found in the earth and in dusts.—*Revue Scientifique.*

PATHOLOGICAL ANATOMY.

REPAIR OF ARTERIES AFTER LIGATION.

BY J. COLLINS WARREN.

The author has studied the mode of the cicatrization of arteries, from the first step to the final conclusion of the reparative process, and from numerous experiments upon horses and dogs, has concluded that the process of repair is different from that usually described and accepted by classic authors. This process is divided by him into three periods. In the first, some two or three weeks in duration, are included the modifications observed immediately after the application of the ligature, and during the times of the gradual separation of the arterial walls. The second, covering about one month, comprehends the formation of an external and internal callus. The third covers the gradual resorption of this and the formation of the definitive cicatrix.

First Period. The complete rupture of the internal and complete or incomplete of the middle coat first occurs; the clot is always present, even when antiseptic measures are employed. Soon after the application of the ligature, there is an accumulation of leucocytes near it, and the knot of the thread is englobed in a mass of embryonary tissue surrounding the ends of the ligature. There is a common proliferation of the elements of the in-

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ternal coat, especially at the peripherical end, and around the point of the clot. Abrasions of the elastic internal coating and granulations of the middle coat exist, but this cellular proliferation remains insignificant, and seems to be principally designed to unite the clot more intimately to the internal face of the vessel. Internally, the embryonary tissue has accumulated sufficiently to envelop the ligation with a fusiform mass. If the wound heals by the first intention, it forms a thick true muff, or external callus. The cells that compose it penetrate between the fibres of the adventitious tissue, and disintegrate and resorb the fasciculus of fibres which are surrounded by the ligature. Both ends of the blood vessel separate, ending by a well closed cul-de-sac, and the encysted thread is resorbed or eliminated.

Second Period. During the third week the embryonary tissue has so far penetrated the internal and middle coats that they separate slightly, the extremities of the vessels opening and allowing this embryonary tissue to enter the interior of the vessel. The critical moment is that when secondary hemorrhage occurs, which may be anticipated in case of the suppuration of the external callus. The new tissue penetrates the inferior layers of the callus, and disintegrates it in forming an internal callus, which is rich in capillaries derived from the external callus.

Third Period. The temporary tissue is now resorbed, and is succeeded by a definitive cicatricial structure. While the inflammatory tissue is resorbed on the outside of the vessel, a cellular differentiation takes place on the inside. Fusiform cells, with nuclei in rods, appear and remain, to form in the cicatrization, a new muscular layer. These, in the places where the internal elastic coat is abraded, mingle with those of the middle coat, meeting each other at right angles.

The cicatrix is always so arranged as to produce a gradual stricture of the artery, and to change it into arterial substance. In very large arteries the cicatrix elongates and is transformed into cavernous tissue.

The researches of the author tend to show that, contrary to the old theory which attributes the obliteration to the thickening of the internal coat, it is the middle coat which contributes the

largest share towards furnishing conjunctive tissue and muscular fibre to the complete cicatrix. The antiseptic treatment offers a better guarantee for the success of the reparative process than all other means now known.—*Revue des Sciences Med.*

EXPERIMENTAL PATHOLOGY.

ON THE TRANSMISSION OF PARASITIC ORGANISMS THROUGH HEREDITY.

BY MAX WOLFF.

The author has studied the question of the passage of bacteria from the mother to the foetus, with the microbes of anthrax, vaccinia, variola and tuberculosis, and he refuses to sanction the theory.

Fœtuses of guinea-pigs and of rabbits whose mothers had been inoculated with the bacteridie of anthrax, were not infected, the microscope or various cultures failing to show the presence of the bacteridie. In vaccinia he has vaccinated pregnant women, and when the vaccine had taken effect has vaccinated the child several days after birth. The result was a characteristic eruption. For variola, he shows that it is only in a few rare cases that the children of variolous mothers are born with the variolic eruptions. And for tuberculosis he has inoculated female animals both before and during pregnancy, and never met with tuberculous products. He considers, therefore, that for these diseases, though transmission may be possible, it is exceedingly rare, and that in man, especially in tuberculosis, the child is infected only after birth, when the infection could take place, not only through the respiratory passages, but also through cutaneous lesions, or the eruptions so common in children.—*Rev. des Scien. Med.*

BACTERIES IN MILK.

BY LOEFFLER.

Pasteur had already observed that in boiled milk, in which the alkaline reaction still exists, caseine can be precipitated, and

at the same time vibrios are developed, which are not killed except at a temperature of 105° .

Loeffler has made a careful study of those bacilli whose spores resisted boiling, and which have the property not only to precipitate, but also to peptonize the caseine of milk. By experimenting with cultures he has found that these were composed of very numerous species, varying even according as the milk was obtained from different cows. He described, however, only four principal and most common species:

1st. The bacillus of potatoes (of Flugge).
2d. The gummy bacillus, so named by Loeffler on account of the appearance of its cultures on potatoes.

3d. The white bacillus.

4th. The butyric bacillus of Hueppe, comparatively rare.

Cultures from potatoes are proved to be the best adapted for distinguishing these four bacilli.—*Ibid.*

EXPERIMENTS ON THE TRANSMISSION OF DIPHTHERIA TO ANIMALS.

By F. PENZOLDT.

Rabbits, chickens, but especially pigeons, were used in these experiments, which were divided into four series:

1st. By the direct inoculation of animals with the false membrane of man.

2d. The culture of the micro-organisms of the products taken from pigeons, and attempts to inoculate.

3d. Cultures of the micro-organisms found in false membrane of diphtheria, and experiments in inoculation.

4th. Culture of the micro-organisms of the blood of individuals who had died from diphtheria, and experiments of inoculation with the same.

The inoculations were made either in the mucous of the beak, or the conjunctiva, or in the trachea, but no typical diphtheria could be produced, although quite often an appearance of yellowish deposits, resting on an elevated red surface, could be detected. These were seen after inoculation made with the false

membranes, or cocci or bacterias obtained by cultures. Upon the conjunctiva and the trachea some little false membrane, either loose or adherent, was produced, the specific nature of which is very doubtful.

In blood cultures Penzoldt has seen diverse bacilli, some analogous to those of tuberculosis, other virgule-shaped, and still others curved like an S. They were very small cocci. A pigeon inoculated with these cultures was affected with paralysis of the wings and legs, and died after three weeks.

Penzoldt asks if diphtheria is a disease of uniform character, or if it may not be the result of different pathological factors, alike only in the clinical manifestations which they produce.—*Ibid.*

ON THE PASSAGE OF BACILLI THROUGH THE KIDNEYS.

BY FR. SOHWEITZER.

To ascertain whether bacterias may pass through the kidneys, the author has experimented upon animals by injecting in the blood a bacillus obtained from the pus of ozena, coloring gelatine and agar in green. He calls it the *green bacillus*. He injected it in the renal artery, and examined the urine taken from a fistula through the ureters. Cultures of this urine proved fertile. Similar results were obtained with the rabbit and the cat.

He then removed one kidney, and when the animal had recovered and the other kidney became hypertrophied he injected the bacillus into the carotid. Urine taken from a fistula of the ureters in this case also gave fertile cultures.

To ascertain whether micro-organisms can pass from the urinary canals into the blood, an injection of the green bacillus was made into the left ureter, and cultures made with blood from the right kidney proved fertile. This experiment proves that bacilli and micrococci can readily pass into the blood when once they have reached the pelvis of the kidney. But by what route do bacilli pass from the blood into the urinary tracts? Sections of the organ show that the micro-organisms are always abundant in the glomerules and in the space existing between them and the capsule of Bowman, as well as in the blood vessels and at the be-

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The author comes to the conclusion that micro organisms can pass intact through the kidneys, but in masses in the urine as soon as a certain number of glomerules have become altered by the contact of the bacilli.—*Ibid.*

EXTRACTS FROM FOREIGN JOURNALS.

LARGE CALCULOUS MASS IN THE BLADDER OF A HORSE.

BY MR. L. SOULA.

Deposits of a sedimentary nature are not uncommon in the bladders of solipeds, and a number of instances of their occurrence are recorded by Hering, Verheyen, Lafosse and Zundel. The author, however, reports one of which the dimensions and weight are far above all those before on record, its weight being not less than 15 kilogrammes, or about 30 pounds. It was found at post-mortem of an animal which had been destroyed on account of his age. The mass was of a light yellow color, with a strong odor of urine, irregularly ovoid in shape, slightly flattened from above, large on its anterior extremity, and ending in a blunt point at the posterior. It measured about 15 inches in length, 12 in width, and 20 in thickness. On its superior face it showed a depression, or kind of cavity, representing the entire dimensions of the urinary reservoir. The ureters opened into the bladder on its level. The analysis of the mass gave 105 parts of water, 188 of organic substances, 607 of carbonate of lime, 72 of phosphates, and 27 of ammoniacal salts and sundries.—*Revue Veterinaire.*

URINARY CALCULUS AND CANCER OF THE BLADDER IN A MARE.

BY MR. A. LABAT.

Out of several cases of lithotripsy in the horse and in mares, reported by the author, the one under notice presents interesting features on account of the presence of the two diseases, of which

one must necessarily almost immediately prove fatal, unless relief were promptly obtained, while the other could not at the best promise more than perhaps five or six months of labor and suffering.

The mare, an animal 15 years old, had for some time been making violent efforts to micturate, the meatus being exposed during the attempt, red and tumefied, and only some high colored and strongly odorous urine escaping. After a day's work she passed blood. Rectal examination revealed the presence of a stone, which was easily felt with the finger introduced in the meatus, but at the same time the bladder was felt full of polypous vegetation. The calculus was removed after being crushed, and it was found necessary to enlarge the urethra by two incisions while accomplishing it. Its weight was 92 grammes, or about 3 ounces. The animal recovered rapidly and resumed her work. She kept at it for a period of six or seven months, when she died. At the post-mortem the bladder was found full of polyps of various sizes and forms, of a greyish color and lardaceous in aspect. Both kidneys also proved to be diseased with encephaloid carcinomatous degeneration.—*Ibid.*

OSTEOMALACIA IN A MARE.

BY MR. L. SOULA.

Under this denomination the author gives a description of a well-observed case of the form of disease well known to American veterinarians under the name of osteo-porosis. Though it may be a disease of rare occurrence in France, we find it on the contrary, very common on this continent. The history of the case referred to presents no features of particular interest to American veterinarians, so far as concerns the slow development of the lesions. The symptoms and mode of manifestations were those usually observed, of general alterations of the organism, variations of appetite, difficulty of digestion, a rheumatoid form of lameness, enlargement of the bones of the head, disease of the teeth, &c., and, finally, death in a condition of excessive marasmus. The post-mortem appearances were such as are generally

discovered, the head especially presenting an unusual deformity, due to the enlargement of the bones of the skull. This affection has already become a subject of study by French veterinarians, principally Messrs. Laquerriere and Germain, under the name of osteomalacia.—*Ibid.*

STRANGULATED INGUINAL HERNIA IN A GELDING.

By MR. BORIE.

A colt of four years presented the characteristic symptoms of standing in a fixed position, as when about to urinate, and gazing fixedly towards his flank. He had been troubled with colics during the day, but did not lie down nor roll. The penis hung out of the sheath, and the visible mucous membranes were highly injected. A suspicion of cystic trouble or urinary calculi occurred, but a rectal examination permitted an accurate diagnosis to be made. The superior inguinal opening was found largely dilated, and a portion of intestines was engorged in it. Manipulation of the left scrotal region revealed the presence of an ovoid tumor, puffy, somewhat hard, and somewhat resembling a testicle—it was a strangulated inguinal hernia. All attempts at reduction having failed, the animal was thrown and operated on in the usual manner without extraordinary difficulty. Recovery took place in about 12 days. The principal interest of this case arises from the fact of the occurrence of the disease in a gelding, a class of animals very rarely suffering from it. It is noticeable also for the illustration which it offers of the possibility of easily committing an error of diagnosis when rectal and inguinal examination is neglected, through inadvertence or from other cause.—*Ibid.*

BIBLIOGRAPHY.

SWINE PLAGUE, ITS CAUSES, NATURE AND PREVENTION, by Frederick S. Billings, Director of the Patho-Biological Laboratory of the University of Nebraska, Agricultural Experimental Station.

Our acknowledgments are due to the donor for a copy of this handsomely made up volume of over 400 pages. The title of the

book, of course, indicates the subject of which its treats, and the readers of the *REVIEW* have already become acquainted with much of its contents through our own pages, in which many of the articles of Director Billings have appeared in previous numbers. The book itself shows how large an amount of work has been performed by the author—we mean original work—and a great deal of credit must be accorded to him for what he has accomplished. We believe that it would have been better if portions of the first part had been omitted, and its criticism been of a different kind, and we think that the truth would not only not have suffered from it, but that the effect would have been quite the contrary. This first part treats of the literature, history, geographical distribution and etiology of swine plague.

In the second, the reader is instructed in the pathological anatomy of the disease, and may study the minute reports of more than thirty post-mortem examinations. These are followed by a comparison of this with similar diseases observed in various countries of Europe. The views of Professors Walley, Loeffler, Schutz, Roloff, Bang, Cornil and Chantemesse are presented, and are full of interest to veterinarians.

The third part refers to the nature, symptoms, diagnosis and prevention of this swine scourge, concerning which so much has been written, and in treating which, we still seem, with all that is known of it, to have failed, and especially in our efforts to discover a positive prophylaxy. A number of wood cuts appear at the end of the book, designed to illustrate the remarks contained in the body of the work.

SANITARY BULLETIN.

SINGULAR STRANGLES.—An extensive outbreak of this disease is reported in Minnesota.

GLANDERS.—The following report is made relating to glanders, in the official publication of the State Board of Health of Minnesota: During the month of July there were forty-six cases of glanders remaining isolated or not accounted for. Six were

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reported during the month; thirteen were killed and three were released. There remained in August, thirty-six cases from the month previous, and ten were reported during the month; twelve were killed and five released. There remained on the 1st of September, twenty-nine cases isolated or not accounted for.

PROFESSIONAL ITEM.

Among the papers to be read at the next meeting of the American Public Health Association, the following promise to prove of special interest to veterinarians: "Tuberculosis; its Origin, Detection and Control," by D. E. Salmon, V.S., Chief of the Bureau of Animal Industry. "Veterinary Sanitary Work in Wisconsin, with special reference to Disease communicable to Man," by V. T. Atkinson, V.S., State Veterinarian of that State. "The Relations of Bacteriology to the Discovery and Prevention of Causes of Infection among Men and Animals," by Theobold Smith, M.D., of the Bureau of Animal Industry.

SOCIETY MEETINGS.

UNITED STATES VETERINARY MEDICAL ASSOCIATION.

The comitia minora of the United States Veterinary Medical Association met at the Rossmore Hotel, New York City, at 9:45 A. M., on September 18th, 1888; and at 10:30 A. M. reported to the general meeting, at which President Huidekoper presided.

The roll call of the 25th Annual Meeting was answered by forty-three members. After the approval of the minutes of the previous meeting, the comitia minora recommended for membership all applicants for membership who were graduates, except Dr. Ward, of Baltimore, whose application was refused on the grounds of unprofessional conduct in his methods of advertising. The name of Dr. Edgar R. Marlin, of Philadelphia, was laid over until the next meeting on the ground of similar charges. Dr. Middleton was admitted to membership.

The Association approved the recommendation of the committee to expel from membership Drs. Spranklin of Baltimore, and Jones of Long Island, for violations of Code of Ethics.

Dr. Coates, Chairman of Committee on Intelligence and Education, reported at some length on recent legislation in New York State in the interest of veterinarians; referred to the death of Crowley in Central Park, from tuberculosis,

and led on to the great importance of the recent Congress at Paris, called to consider the great dangers of its transmissibility from animals to man, through the ingestion of meat and milk; noted the establishment of chairs of veterinary science at Quebec, Canada, and at the State College in South Carolina.

Dr. Hoskins, Chairman of special committee to secure uniform standard for the different schools of veterinary science, announced another addition to the three-term schools.

Dr. Zuill, Chairman of Committee on Infectious and Contagious Diseases, commented upon the prevalence of contagious pleuro-pneumonia and tuberculosis, referring very forcibly to the dire need of legislative action relative to the checking of the progress of the latter disease, cited the dangerous extent of glanders and farcy in certain localities, particularly parts of Pennsylvania. Furnished statistics of the extent of anthrax, rabies and hog cholera. Extolled the beneficent work of Dr. Salmon and his able corps in the Bureau of Animal Industry.

On army legislation, Dr. Pendry, Chairman of Committee, reported the slow progress of the bill. He was followed by Dr. Huidekoper, who advised the recall of this present bill and its need of revision.

An election of officers for the ensuing year then took place, resulting as follows: President—Dr. R. S. Huidekoper, Philadelphia, Penn. Vice-President—Dr. D. J. Dixon, Hoboken, N. J. Secretary—Dr. W. Horace Hoskins, 12 S. 37th Street, Philadelphia, Penn. Treasurer—Dr. James L. Robertson, New York City. Comitia Minora: Drs. Zuill, McLean, Clement, Ross, Howard, Winchester and Wray.

A rising vote of thanks was unanimously tendered the retiring Secretary, Dr. Chas. B. Michener, for his zealous and efficient services.

Dr. R. S. Huidekoper read a very carefully prepared and highly interesting paper on the "Origin of the Domestication of the Horse."

The subject of Tuberculosis was then taken up, and after considerable discussion, a committee composed of Drs. Lautard, McLean and Clements, were named to draft a series of resolutions, relative to the rapid increase, the dangers from ingestion of meat and milk of tuberculous animals; the need of properly qualified veterinarians, as inspectors of dairies, markets and slaughter houses; instructing them to forward these resolutions to the Medical Congress in session at Washington, D. C., and a copy to all city, State and National Boards of Health.

Dr. J. C. Myers, of Cincinnati, then referred to a recent article describing a disease known as "Mad Itch," which had been written by him about the years 1869 to 1871, during an enzootic outbreak in a distillery stable used for fattening purposes.

After a vote of thanks to the essayist, the meeting adjourned to meet in Boston the coming March.

In the evening a banquet was given at the Rossmore Hotel, where several toasts were responded to by invited guests and members, and all enjoyed the bountiful board so generously spread before them.

W. HORACE HOSKINS, *Secretary.*